

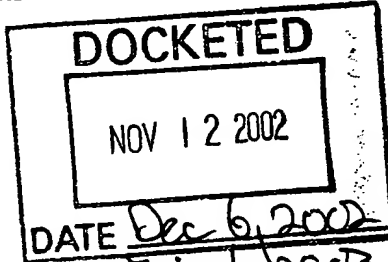


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| 09/322,444      | 05/28/1999  | MORIHIKO MINOWA      | FUJO-16.155         | 8016             |

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EXAMINER

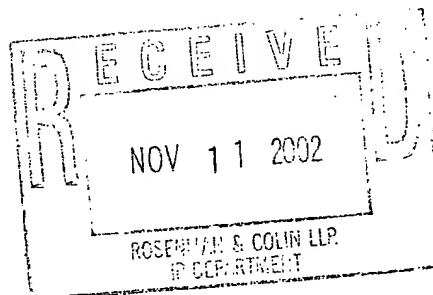
HO, DUC CHI

ART UNIT PAPER NUMBER

2665

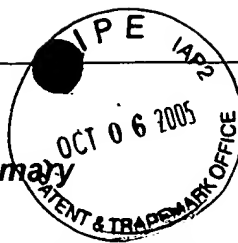
DATE MAILED: 11/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.



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# Office Action Summary



Application No.

09/322,444

Applicant(s)

MINOWA ET AL.

Examiner

Duc C Ho

Art Unit

2665

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 28 May 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 16, 18 and 19 is/are rejected.
- 7) ☒ Claim(s) 4-15 and 17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

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## **DETAILED ACTION**

### ***Drawings***

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102(e) that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily

published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 1-2, 16, 18, and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Shou et al. (U.S. 5,910,598), hereinafter referred to as Shou.

Regarding claim 1, Shou discloses an acquisition scheme and a receiver for an asynchronous DS-CDMA cellular communication system.

Referring to figure 1, antenna 11 of a receiver receives spread spectrum signals from a base station (not shown) transmitted over a detected n-path, column 5, lines 24-25, and column 5, lines 60-65.

*a path detector (a n-path Detector 24-fig. 1), which is used in a time-division manner so as to generate timing signals for the plurality of channels ( the CDMA receiver of Shou includes a single n-path Detector 24-fig. 1 and a plurality of n-despreading means 40-fig. 2 of the 28-1 to 28-n correlator. As configured, the path detector operates for a plurality of despreading means, therefore, the path detector is shared by the plurality of despreading means in a time-division manner. It is noticed that each path is considered as a channel.),*

*for generating a timing signal corresponding to each of the plurality of channels ( a delay time information of each path detected by the path detector 24-fig.1 implies that the detected delay time information is the timing signal corresponding to each of the plurality of paths, column 6, lines 28-35),*

*according to a correlation between an input signal including the spread signals which are respectively transmitted over the plurality of channels( according to a correlation calculated in complex matched filter 22-fig. 1 between the received spectrum spread signal and short code #0 generated from the spread code controller 33, column 8, lines 2-8, which are respectively transmitted over the plurality of paths of the plurality*

of correlators via the units 23, 24, 26, and 27 )and a spread code corresponding to each of the plurality of channels( and the spread code sequence generated by the spread code generator set 61-fig. 2 in each correlator for each path); and

a plurality of despread demodulators ( a plurality of despreading means 40-fig. 2), which are arranged for the plurality of channels ( of a plurality of correlator 28-1 to 28-n are arranged for a number of n paths), for demodulating a corresponding spread signal among the plurality of spread signals ( for demodulating a corresponding spread code sequence generated by the unit 61-fig. 2 among the plurality of spread code sequence signals) included in the input signal according to the timing signal generated by said path detector ( included in the received spread spectrum signal for each path according to a delay time information detected by the path detector 24-fig. 1, column 6, lines 28-35).

Regarding claim 2, Shou in figure 1 discloses

spread code generating means (a Spread Code Generator 21) for generating spread codes corresponding to the plurality of channels in an order according to a predetermined algorithm (for generating short code #0 to a plurality of n paths according to the instruction of the Spread Code Controller 33-fig. 1, column 5, lines 45-47, and column 8, lines 17-21);

a matched filter ( a Complex matched Filter 22-fig, 1) for outputting correlation level data ( correlated output, column 8, lines 17-21) between the input signal (  $R_i$  and  $R_q$  of the received spectrum signal) and the spread code generated by said spread code generating means ( and the short code #0 generated by the Spread Code Generator 21); and

*timing signal generating means* ( an Electric Calculator 23, column 5, lines 60-67) *for generating a timing signal based on the correlation level data (the correlated output of the matched filter 22, see Fig. 9-Stage 1).*

Regarding claim 16, Shou discloses in figure 2 a structure of the matched filter 22-fig. 1, where the delay circuit is .

*delaying means* ( the delaying circuit 62 -fig. 2) *for delaying a signal* (for delaying the spread code sequence P-code generated by the unit 61, column 6, lines 57-67) *to be input to the plurality of despread demodulators* (to be input to each of the desreading means 40-fig. 2 of each correlator ) *by an amount of time required to generate the timing signal by said path detector* ( by an amount of  $\frac{1}{2}$  tip cycle which is controlled according to the delay time information of each path detected in the path detector 24, column 6, lines 28-35).

Regarding claim 18, Shou discloses an acquisition scheme and receiver for an asynchronous DS-CDMA cellular communication system.

Referring to figure 1, antenna 11 of a receiver receives spread spectrum signals from a base station (not shown) transmitted over a detected n-path, column 5, lines 24-25, and column 5, lines 60-65.

*a path detector* (a n-path Detector 24-fig. 1), *which operates in a time-division manner* ( the CDMA receiver of Shou includes a single n-path Detector 24-fig. 1 and a plurality of n-desreading means 40-fig. 2 of the 28-1 to 28-n correlator. As configured, the path detector operates for a plurality of desreading means, therefore, the path detector is shared by the plurality of desreading means in a time-division manner),

*for detecting delay profiles* ( the path detector 24-fig. 1 detects the correlated outputs which are the delay profiles from the Complex Matched Filter 22 through electric

calculator 23, column 8, line 17-21) *for the plurality of channels* ( for a number of n paths),

*and for generating a timing signal corresponding to each of the channel based on the delay profiles*( the delay time information of each path that based on the correlated outputs is considered as the timing signal of the instant application, column 6, lines 32-35); *and*

*a plurality of despread demodulators* ( a plurality of despreading means 40-fig. 2), *which are arranged for the plurality of channels* ( of a plurality of correlator 28-1 to 28-n are arranged for a number of n paths), *for demodulating a corresponding spread signal among the plurality of spread signals* ( for demodulating a corresponding spread code sequence generated by the unit 61-fig. 2 among the plurality of spread code sequence signals) *included in the input signal according to the timing signal generated by said path detector* ( included in the received spread spectrum signal for each path according to a delay time information detected by the path detector 24-fig. 1, column 6, lines 28-35).

Regarding claim 19, Shou discloses an acquisition scheme and receiver for an asynchronous DS-CDMA cellular communication system.

Referring to figure 1, antenna 11 of a receiver receives spread spectrum signals transmitted over a plurality of (1-n) paths from a base station (not shown)

*a plurality of despread demodulators, which are respectively arranged for the plurality of channels for demodulating a spread signal transmitted over a corresponding channel* (as illustrated in figure 1, a plurality of despreading means 40-fig. 2, column 6, lines 50-53, of a plurality of correlators 28-1 to 28-n in figure 1, are configured in such a way that each despreading means is arranged respectively with each path for demodulating a received spread spectrum signal from the antenna 11-fig. 1 over a

corresponding path) *by despreading the spread signal with a corresponding spread code ( the received spread spectrum signal is despread with a spread code sequence generated by the unit 61-fig. 2 in the corresponding correlator, column 6, lines 28-35); and*

*instructing means ( a correlator controller means 27-fig. 1) for instructing a phase (the unit 27 receives inputs from the Mux 26-fig. 1, so as to control a phase) of each spread code used for spreading each of the spread signals transmitted over the plurality of channels (of the spread code sequence generated by the spread code generator set in each of the 28-1 to 28-n correlators, column 6, lines 3-12), wherein*

*said instructing means is shared by the plurality of despread demodulators (the unit 27-fig.1 is connected to each despreding means 40-fig. 2 of each of the 28-1 to 28-n correlators).*

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein



were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shou, in view of Watanabe ( US 6,307,850).

Regarding claim 3, Shou discloses all claimed limitations, except  
*a spread signal transmitted over each of the plurality of channels (1) includes pilot signals inserted at predetermined intervals; and*  
*said path detector generates the timing signal (2) by using the pilot signals for each of the plurality of channels.*

Watanabe discloses a CDMA transmission system in which the pilot signal is inserted into the transmission data series at regular intervals.

Referring to figure 8, in this transmission apparatus, the pilot signal is inserted into the transmission signal data series at regular intervals by the switch 86, column 1, lines 47-51( corresponding to (1)).

Referring to figure 7, in this CDMA receiving apparatus, the correlators 632, 634, and 636 despread the reception signals output from the reception RF section 62 on the basis of the spread codes generated by the spread code generators 652, 654, and 656 to thereby demodulate a pilot signal transmitted through the respective channels, column 6, lines 7-21( corresponding to (2)).

It would have been obvious to one of ordinary skill in the art, at the time invention was made, to employ a switch for inserting pilot signal into the transmitted data at regular intervals at a transmission apparatus, and to demodulate the pilot signal

transmitted through the respective channels at a receiving apparatus as taught by Watanabe into the transmission apparatus and reception apparatus having a path detector of Shou, respectively, in order to solve the problem in such coherent detection, in which the transmission side transmit a pilot signal contained in transmission data to the reception side so that the reception side estimates the condition of line on the basis of the results of the reception of the pilot signal and corrects the distortion of the transmission signal due to fading.

***Allowable Subject Matter***

8. Claims 4-15, and 17 are objected to as being independent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Yugawa( US 6,233,272); Nakano (US 6,052,405); Higashi et al. (US 6,026,115) are cited to show a receiving device for use in CDMA communications, which is considered pertinent to the claimed invention.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duc Ho whose telephone number is (703) 305-1332. The examiner can normally be reached on Monday through Friday from 7:00 am to 3:30 pm.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu, can be reached on (703) 308-6602.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-4700

11. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

**or faxed to:**

(703) 872-9314

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,  
Arlington, VA, Sixth Floor (Receptionist).

Patent Examiner



Duc Ho

10-17-02